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Utilising Insight Journalism for Community Technology Design

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ABSTRACT

We describe the process of *insight journalism*, in which local amateur journalists were used to generate unique insights into the digital needs of a community. We position this as a means for communities to represent themselves to designers, both as a method of designing community technologies and as a first step towards supporting innovation at a local level. To demonstrate insight journalism, we present two case studies of community technologies that were directly inspired, informed and evaluated by journalistic content. Based on this experience, we evaluate the role that insight journalism can play in designing for communities, the particular characteristics that it lends to the design process and how it might be employed to support sustainable community innovation.

INTRODUCTION

Although digital technology is now widespread, access to and usage of this technology is not universal. A digital divide exists between those who can take full advantage of this technology and those who, for various reasons, cannot or otherwise do not. While this divide is perhaps most marked between developed and developing countries, such divides also exist between the young and old, or the affluent and financially disadvantaged.

A typical response to the digital divide is a technology push, such as providing access to training or subsidising laptops and Internet connectivity. Although these are important efforts, the technologically deterministic approach of changing people's behaviour in order to fit current mainstream technologies runs counter to the user-centred and participatory approaches we espouse in HCI. We suggest that one aspect of digital exclusion is that current technologies simply might not meet the needs of a sizeable segment of the population. For example, investigations into Internet banking for older users have shown that existing solutions don't provide the transparency or ease of tracking that they are accustomed to and require [26]. The suggestion that people should change to meet certain pre-existing expectations of technology users risks being an exclusive attitude in itself.

An alternative approach would be for innovative designs to emerge at a grassroots level, from those where those who best understand their own needs. Addressing a similar issue, Rogers and Marsden [21] have suggested a need to move beyond simply designing *for* particular user groups and instead focus on "enabling people to become better equipped to the point where they can innovate for themselves". This approach has been particularly successful in developing countries, where local innovation has taken the form of re-appropriating technologies into new roles that suit local needs.

As a first step towards the challenging goal of supporting local innovation, we see a need for methods by which communities can communicate the issues that matter to them. This means not just responding to the inquiries of designers, but taking a leading role in driving this conversation and representing themselves—be it to academics, industry, government organisations or grassroots makers. One area where this self-representation is already happening is within citizen journalism, where widespread Internet access, combined with mobile devices that can record and upload in-situ, has led to a rise in amateur journalists creating and publishing their own content. This is frequently hyperlocal news, representing a very personal and localised perspective. We have therefore sought to harness citizen journalism as a method for

communities to represent themselves and their own needs to designers both within their communities and outside.

Over a two-year period, we worked with the Callon and Fishwick communities in Preston, North West England, to employ citizen journalists in the design of innovative technologies that respond to the community's unique characteristics. The UK government ranked these areas as being amongst the most disadvantaged in the country. A number of issues within the community—including incidents of racial tension and drug use—had led to negative media coverage of the estate that had persisted despite significant work to improve life on the estate. This meant that the community had specific needs that we could address through technology interventions, but also a desire to better represent themselves to others.

In this paper, we describe *insight journalism*, which we position as a potentially sustainable model of community-centred innovation. We describe two examples of community technologies and show how journalism inspired the designs and informed their development and evaluation. We aim primarily to establish that insight journalism is a viable tool for community technology design, but further examine how the particular characteristics of this approach might go on to support local innovation.

BACKGROUND

Understanding end-users in order to create appropriate technologies in one of the core principles of human–computer interaction. As a field, we have moved from simply designing with end users in mind through to actively involving users as participants in the design process. Participatory design has been taken up with fervour, configured in a number of different ways and for different purposes, with the degree of participation varying dramatically [13]. However, while these practices originated in the workplace, the movement of technology out of this environment and into domestic and public spaces presented new challenges for participatory design [3], necessitating a shift from "democracy at work to democratic innovation" [2]. In this vein, while Carroll and Rosson [4] note that participatory design is particularly suited to the development of community informatics, they highlight that the core challenge is "one of creating a self-directing and sustainable process of continuous learning" [4]. Despite this, a survey of participatory design [1] found that very few participatory design projects can be described as design *by* users.

This challenge has led some to embrace action research [10], an approach closely related to participatory design [6]. Action research embodies a commitment to contributing academic knowledge while solving practical problems, achieved by participants working iteratively with researchers to effect a sustainable change in their environment. For example, Merkel et al. [18], focused not on designing or developing technology for communities, but on working with participants and supporting them in developing solutions themselves. This sustainable model of innovation is difficult to achieve, but important in ensuring lasting impact of our research [24], as opposed to low commitment shown from designers to participants in some examples of third wave HCI [3].

However, the tools for achieving this can be very different when working with communities rather than in workplaces. The use of workshops and other standard approaches has been shown to be off-putting in these contexts [22], particularly where participants lack confidence. We position insight journalism as one of many tools that might be used in working with communities and one that places the community in an active role of pushing their own agenda via journalistic practices. This ability to represent their own views, on their own terms, is one of the most interesting facets of citizen journalism [25].

Journalism and related practices, such as filmmaking, already have a history within anthropology, ethnography and subsequently HCI. Mead saw moving image as an ideal recording device, able to collect a vast amount of objective ethnographic data that could be "repeatedly reanalysed with finer tools and developing theories" [17]. This approach has been carried forward into ethnographies of interactive system use and allows the fine details of interaction with artefacts and other people to be analysed in great detail [20]. It has likewise become a common tool for recording and reflecting on participatory design activities [14].

The role of Gaver's cultural commentators [8] is particularly close to that of our insight journalists. In Gaver's work, professional outsiders created articles and documentaries around designs and prototypes, targeted at a broader audience. They became an additional voice in the design process, distinct from the designers, researchers and participants who are typically represented. Maunder et al. [15] subsequently adopted this technique in their work with South African townships, where Xhosa-speaking media students were employed to interview participants about their use of technologies developed through the project. This overcame language and cultural barriers between the research team and the participants, while also encouraging more candid feedback. Whereas both these examples involve outsiders, insight journalism focuses on local reporters—giving the participant a stronger voice rather than introducing a new one.

While cultural commentators focused on evaluating designs, others have used documentary filmmaking a part of the design process. For example, Hook et al. [11] utilised documentary filmmaking with the intention of exposing tactic knowledge that was difficult for participants to articulate. Participants were featured in professionally created documentaries, which were subsequently used to prompt them to reflect on their own practices. Closer to our own approach, Raijmakers et al.'s design documentaries [19] took the form of compiled interviews, scripted

personas and genuine responses to the personas. Like cultural probes [7] and our own approach, these documentaries were not intended to build a concrete set of requirements, but rather to give an overall impression the user group that might be used to inspire and inform design.

Insight journalism builds on these past approaches by utilising journalistic practices throughout the entirety of the project. It represents a voice from the community that is present from initial scoping of the community through to evaluation. Furthermore, where each of these approaches has taken the form of an external intervention, we position insight journalism as a community-driven process that could be sustained from within the community to support long-term local innovation.

INSIGHT JOURNALISM FOR DESIGN

The process of insight journalism utilised in our project involved a range of different actors and a number of distinct stages. A team of citizen journalists, drawn from the local community, worked alongside a project team comprising: a design team with backgrounds in interaction design, product design and digital craft; an editorial team of journalism academics from the Preston area providing training and managing briefs and reports; and social scientists studying the methodology. The general process involved the editor setting briefs for the journalists, who responded by investigating the community and reporting back in a variety of media (Figure 1). Subsequently, the design team utilised these reports to create a series of concepts for community technologies leading to two deployments.

In the following sections, we describe the stages of insight journalism: building a team of journalists and creating an initial body of material pertaining to local issues; generating design concepts based on this material; and finally refining these designs through further reporting before deploying and evaluating finished products.

Reporting on the Community

Through the first year of the project, the editorial team worked to recruit and train journalists. Volunteers were recruited through various local organisations and service providers and taught basic journalism skills. This included news values—such as relevance, proximity, timeliness, impact and currency—and narrative structures in text, video and audio. Workshops on interview techniques, developing briefs, building relationships and critical approaches to stories were complemented by opportunities to practice and receive feedback. The reporters were also trained to use extremely lightweight video and audio recording kit and editing software. Each of the journalists was paid through a government scheme designed to provide work experience for unemployed people.

Following their training, the citizen journalists were given both an open brief to report on any issues important to the community, but also specific briefs relating to particular topical issues in the community with guidance on what shape the piece might take or key questions that needed to be answered. The editorial team had a close working relationship with the journalists, helping to refine their reports and running both one-on-one tutorials and peer feedback sessions. Although content being returned was copyedited, the editors operated a lightweight, inclusive policy and did not make value judgements on the reports.

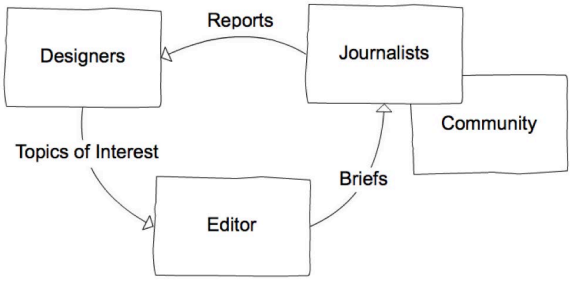

Figure 1. Citizen journalists responded to briefs set by the editor and generated reports to be used by the design team.

Early reports most often described activities that were being carried out around the area. Many depicted positive stories about the community intended to dispel negative preconceptions. Examples include awards or funding received by local organisations, sporting events and new facilities being opened. Initially, this content was entirely distributed via the web, but low usage by the community led us to create a monthly paper newsletter that was distributed to over 2,000 households in the local area, greatly increasing the readership of the journalists' work.

During this period, the design team reviewed content remotely through the website and newspaper, complemented by project meetings where batches of content would be reviewed and discussed as a group. Based on the first tranche of reports, the team identified a number of areas of particular interest and commissioned further reports from the journalists via the editor. These topics included coverage of a local festival, regeneration of the community, green spaces in the local area and media representation of the estate.

Generating Designs

Approximately one year into the project, once a body of content had been created, the design team utilised the reports to inspire a series of concepts for community technologies. At this point, the community newspaper had been published monthly for seven months, supplemented by additional video and audio content published on the web. In an intensive weeklong workshop, designers watched a showcase of the journalists' most recent work, responding to the topics and briefs issued previously. During this showcase, many of the journalists attended to present their own work and both the design team and their fellow

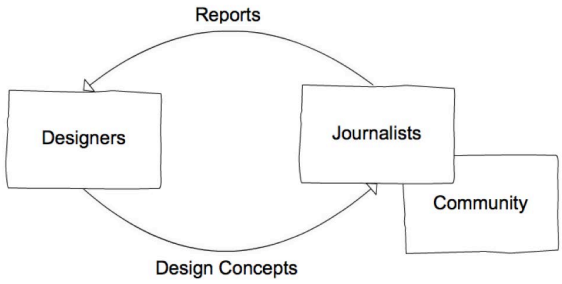

Figure 2. Journalists communicated designs to the community and reported feedback and opinions to the design team.

journalists were given the opportunity to ask questions about their reports afterwards.

Following the presentations, the design team used a typical product design ideation approach to generate a hundred basic design sketches that responded to the reports, then refine these down to five candidate concepts. These included a community radio device for playing local news bulletins, a household display with channels for different community groups, a voting device for gauging community opinion, a digital signpost for advertising local events and a competitive system for timing walks or runs around a nearby nature reserve.

Reporting on Designs

After the five concepts had been created, the journalists' role changed to soliciting feedback on the designs (Figure 2), which would be used to refine the concepts and select which should be taken forward. Press briefs were written outlining each of the concepts and a press launch event was then organised to unveil the concepts to the journalists. This fulfilled the role of a product pitch, providing an opportunity for the journalists to interrogate the design team by asking questions during the presentations and interviewing the researchers afterwards.

Following the press event, a special issue of the newspaper was published highlighting each of the designs and the journalists' personal first impressions of each one. Again, the journalists conducted interviews with members of the public and created articles that both collated these opinions and offered their own views and questions about how well each of the designs might function in the community.

Once this material had been submitted, the design team gathered again to review the responses, before selecting two of the designs to be developed further. These decisions were based on a number of factors, including the response of the community and the journalists, which was used to gauge enthusiasm for the designs and to identify issues that might be caused by the realities of use in the community. This was balanced against other criteria, such as technical feasibility or, in the case of content-driven technologies, whether the community could support them sustainably.

To further refine each design, we created low-fidelity prototypes that captured the core functionality of each design, which were then demonstrated at a community event being covered by the journalists. Although this deviated slightly towards more traditional community engagement approaches [e.g. 22], it was partly motivated by our observation that the journalists often struggled to communicate the designs. These demonstrations succeeded in highlighting low-level interaction issues that were rectified in the final prototypes.

Each of the final prototypes was deployed into the community, initially for a trial period of three months. During this time, the journalists were again asked to document the community's use and reaction to the deployments through a final round of reports.

CASE STUDIES

Of five concepts generated, we selected two to be developed through to final products and deployed in the community: Viewpoint, a lightweight voting device, and Wayfinder, a digital signpost. In the following sections, we describe how the process of insight journalism described above shaped the development of these designs.

Viewpoint

Viewpoint [23] initially emerged from issues faced by journalists in the form of unwillingness from local residents to be recorded offering their opinions about issues in the area. In some examples, residents would agree to audio recordings but not to video, while in others the journalists relayed opinions from those who refused to be recorded at all. Viewing these pieces with journalists prompted a discussion over the issue, in which it was reported that some felt that airing their opinions would lead to them being identified and labelled as "busybodies", while others felt largely disenfranchised after a long history of consultations with little perceived benefit. Building on this finding, one of the five concepts presented back to the community was based around the idea of a barometer measuring the 'climate' of opinion within the community. This would allow local authorities to post questions, which residents would vote on by text message. This was presented to journalists alongside the other concepts at the press launch and published in the project newspaper.

From this point, the journalists' role was to report the concepts and collect feedback from the community. One journalist produced a video piece containing opinions on both democracy generally and Viewpoint specifically. Door-to-door interviews with residents found few voted in national elections and felt that voting didn't make a difference to their lives. Responding to Viewpoint, residents found it interesting but expressed concerns that nothing would be done with their feedback. This report also stressed the importance of keeping the device simple in order to maximise its appeal. A second journalist focused on the practicalities of the design, particularly on whether a

vote could be conducted fairly. In a third piece, it was clear that the journalist had difficulty communicating the concept to members of the public. In a lengthy recording, one interviewee pushes for further details, which the journalist was audibly uncomfortable in trying to provide.

Although there was some scepticism amongst the feedback, it also proved to reinforce dissatisfaction with the current situation and the potential for an intervention around collecting opinions. Taking concerns about Viewpoint's efficacy into account, our design consequently evolved to include a strong focus on creating a feedback loop of positive change: the device should not just collect opinions, but also report back to the community on what action would be taken as a result of their input. This was intended as positive reinforcement, designed to create a sense of empowerment and encourage future engagement.

Before actually implementing Viewpoint, we created a low-fidelity prototype that demonstrated how the concept might work, which was shown to key community figures and demonstrated at a local event celebrating the area. Although this was a deviation from the planned methodology, in which the design team would not engage directly in design activities with the community, the event was covered by one of the journalists and the demonstration was part of their subsequent reports. This step was taken because we felt a need to "sell" the design, particularly to key stakeholders who would host the deployments. The demonstration helped us identify more low-level interface issues, leading the final design to be much simpler. We additionally identified discomfort with text messaging as an interface, leading us to consider other methods of voting.

The final Viewpoint device (Figure 3) consequently comprised two large buttons for voting on binary questions and a scroll wheel to view previous poll results and official responses, which were installed in public spaces in the community. Local councillors and community organisations posted questions to inform their decision-making and hopefully lead to direct results. A total of eight questions were posted during the two-month deployment, each attracting between 200 and 300 votes, far exceeding our own expectations.

The last stage in the process was to commission a final round of reports from the journalists, this time focusing on the impact that the devices had and the reaction from the community. This began at the point of deployment, where a journalist was present documenting the installation and collecting sound bites from the team and community members. At the end of the deployment, one of the journalists conducted interviews with two of the community leaders who posted questions, collecting highly positive feedback, particularly about the quantity of votes received. Another conducted a photojournalism study, collecting quotes from passersby who used the device. These were generally more sceptical, with a significant number of interviewees suggesting that they had not used the device,

Figure 3. Viewpoint.

or expressing the same concerns that there would be no meaningful response to the polls.

Although the quantity of feedback at this stage was lower than we had hoped, it did provide us with enough varied opinions to effectively evaluate Viewpoint, particularly when combined with our own logged data and observations. It was clear that Viewpoint had been a successful tool for community organisations to collect data, but was less successful in supporting meaningful change or influencing attitudes towards civic engagement.

Wayfinder

Like Viewpoint, the second design to emerge through the insight journalism process was rooted in the broader character of the materials generated, rather than from the expression of a distinct need. One of the primary uses of the project newspaper proved to be acting as a cheerleader for the community, reporting good news and upcoming events. Many of the journalists also chose to interview community organisers, highlighting the work that they did in the area and the issues that they faced. The contrast between the amount of effort being exerted by these organisations and the perception of services available by residents was marked. The collective impression left by these reports was that many of the events and activities being organised in the community were not as visible they could be. In particular, there was a lack of communication between the two co-located neighbourhoods, each of which centred on its own community hub with separate activities.

Three of the five concepts consequently focused on communication with the community. Amongst these was Wayfinder, a digital signpost that could be updated by text message to point out interesting things happening nearby. This was intended as a means of increasing awareness of activities in the community, both within the local area and to visitors, thereby challenging outside perceptions. Inspiration for the physical form of a signpost was taken from signposts in a wooded area near the community,

which featured in one of the journalists' reports. The other concepts in this theme were a network of home displays and a community radio system, both of which would distribute information directly into the home.

Rather than focusing on these technologies individually, one of the briefs covered the topic of communication more broadly, with the intention of looking deeper into this issue. One of the journalists wrote two reports, in the style of a newspaper and a magazine, describing current methods that organisations used to promote their activities. Community figures spoke directly about the role that promoting their activities played in representing the community, where outside representations were typically negative. These confirmed the sense that new methods of communicating activities might benefit the community.

Wayfinder was eventually chosen over the other two designs due to concerns that we would struggle to generate sufficient content for the in-home technologies, whereas Wayfinder required only small chunks of information that could be sourced opportunistically. Our intention was that any member of the public would be able to post their event, such as an impromptu football match at the park, using an SMS text message.

Alongside Viewpoint, we then presented the concept to key members of the community, whose main feedback was concerns about possible abuse if anybody could post messages. As a result, we planned to only give submission instructions to the organisations hosing the deployments, which could distribute these instructions as they saw fit, thus delegating trust to the community. At this point, the design also evolved from a free-standing signpost to a wall-mounted weather vane, due to the practical difficulties of powering free-standing deployments.

The final prototype comprised a scrolling LED screen and a rotating arrow (Figure 4). When an SMS text message detailing an event was sent to the device, the message would be displayed and the arrow would rotate to point towards the location of the event. The three Wayfinders were installed inside a community centre, outside a local housing office and outside a church. Each of these was a central community space and typically hosted or organised activities in the area.

Two pieces of journalism reported on Wayfinder, one in video and the second as a photo study. These contained reactions from community organisers and members of the public, finding more conflicting opinions than for Viewpoint. The general concept was well-received: in one interview, a local organiser expressed that while awareness of their activities was high within their own circles, Wayfinder could help to reach a wider audience around the community. However, the particularly implementation was met with criticism. Many interviewees felt that the fidelity of the information—limited to under 160 characters—was too low and many did not realise that the arrow was

Figure 4. Wayfinder.

directing them towards events. Other issues included the text not being visible in direct sunlight, or text moving too slowly or too fast. Perhaps most surprising of all was that few had strong feelings about the installations, which we had expected to be a striking feature in the community.

Usage was initially very low, as Wayfinder hosts reported considerable trouble sending messages to the devices and only 79 messages were posted across the two-month trial. However, one Wayfinder remains in use over two years after the project's conclusion, where it is used to broadcast news and events to the community. By contrast, none of the Viewpoint installations were continued beyond the initial deployment period. While it might not have met an urgent need in the community, it became clear over time that an additional channel of communication, particularly one that was created expressly *for* this community, was valued by local organisations.

ANALYSIS

The two case studies described above offer examples of how insight journalism is capable of inspiring and evaluating designs for community technologies. In this section, we discuss the key characteristics of insight journalism that emerged through the project. These findings are drawn from our experiences as a team across the entire project and from interviews conducted with each member of the team towards the end of the project. We approach this primarily from our own perspective as designers, with a view to first establishing the viability of insight journalism as part of a design process, but also consider how these strengths and weaknesses might impact the further potential for insight journalism to act as a self-sustaining process.

Responsiveness and Reflexivity

For the design team, the main goal of insight journalism was to inspire designs that were responsive to genuine local issues. However, rather than identifying specific high profile issues within the community or firm design requirements, we employed journalism as a means of providing *insights* into the community. A member of the design team articulated this difference as follows: *"an*

insight is basically a starting point for a design, a requirement gives you an end point".

In this sense, the approach can be likened to cultural probes, which do not aim to create a complete picture of the user group, but to bring forward inspiring details and flashes of colour that might otherwise have been missed. One of the designers characterised this in terms of *"the foreground, the background and the in-between"*. While interventions typically target foreground problems, our approach gave what was described as *"a broader picture of the community"*. We also see similarities here to opportunity spaces [12], where there is not a burning need for a particular intervention, but new technologies instead offer opportunities that may bring added value. In both of our case studies, we applied technology to broad issues where there was not so much an identified need, but a sense of general dissatisfaction and room for new possibilities.

As we moved further into the project, insights taken from the journalism fed back into further reports through briefs on specific topics of interest. The design team noted that these commissioned pieces were *"more valuable than the stuff that wasn't directly commissioned"*. However, these topics might not have been identified without the initial batch of journalism. This reflexivity continued when journalists were employed to gather feedback on the five initial concepts and required much more focused information. Here, the narrower focus led to more considered and critical reporting, such as insightful discussions about multiple voting in Viewpoint.

In these stages, the close relationship between the journalists, the editor and the design team played an important role in communicating areas of interest and feedback from the community. In a fully realised process, in which the community drives its own innovation, we would see this taking the form of a highly collaborative and reflexive process of coproduction akin to action research.

Representing the Community

In attempting to enable local innovation, insight journalism plays the role of representing the community and its interests. In this sense, we would argue that the journalists were not serving us as discount ethnographers, but that we were serving the community as a response to their voice. What the journalists achieved was to *"represent their community as it wished to be represented"*, creating an authentic voice that highlighted matters of local interest.

Throughout the project, we maintained a relatively low threshold of entry, not scrutinizing the newspaper against any external criteria of newsworthiness but rather allowing it to organically represent and develop the informational needs of local residents. From a journalism perspective, this material might be seen as lacking a *"critical account of the underlying issues"* that sets journalism apart from other forms of communication. In this sense, the journalists essentially acted as spokespeople for the community, but the design team praised this effect. One of the designers described a video where the journalist simply walked around a community event, filming and describing what was happening. Although this was not, by the designer's definition, journalism, he felt it gave *"a richer feeling of the place"* by depicting *"mundane activity"*.

From our perspective, that also meant that we were less able to influence the nature of the content. One designer noted that relinquishing control of the process in this way meant that *"sometimes the things we got back weren't particularly useful"*. However, while it may not have been valuable to us, the content generated by the journalists still exists and was widely distributed. Unlike material generated through existing approaches, which is unlikely to be disseminated back to the community, the content generated and published through this process could easily have a lifespan beyond the project itself. Other designers—or even by policymakers and other interested parties—seeking to understand the community might take very different insights away from the content, but still develop responses grounded in the community.

Provenance of Designs

The fact that journalism inspired rather than directly informed design meant that the provenance of design ideas was often unclear. Although we could pinpoint the source of specific details—for example, a wooden signpost that inspired Wayfinder's initial form—the overall concept of each design emerged much more holistically. There was no single instance, for example, that demonstrated the need for new methods of highlighting local events. These insights were *"something that came across in small ways in a lot of* [the data]*"*.

In particular, the ideation process in which initial concepts were generated was described as a *"black box that you can't rationalise"* by one of the team. A more critical member of the design team suggested that the links were tenuous, questioning the extent to which they had truly been informed by the journalism and highlighting a need *"to demonstrate that this process of using journalism is valuable to the end artefact"*. From a research perspective, this is somewhat unsatisfying, as it makes it difficult for us to justify design decisions.

In some ways, the holistic view of the community that we were able to take is a strength of the approach. However, for some purposes there may be a need for better documentation of the process, although it's not immediately clear what form this might take. One suggestion might be for the journalists themselves to play a more critical role in questioning the design team and demanding greater accountability to the community. An alternative might be to use workbooks [9], which record the way in which ideas emerge over time from multiple sources. Although this is perhaps of more concern to us as researchers than to the

community, designers utilising citizen journalists may also need to be prepared to justify themselves to the community.

Working with Different Media

The insight journalists created materials in a variety of media, including text, video, audio and photo. A majority of the material was written, but this was largely because it was written for the newspaper format, which had proved more popular with local residents than the project's news website. However, this was not the preferred medium for either the journalists or the design team.

Almost all of the designers expressed a preference for video footage over other media used by the journalists and this material played a large role in the design process. In part, this was a practicality: whereas members of the team admitted to skim reading the newspapers, the videos were described *"pre-digested"* and *"easily consumable"*. At project meetings, the team would review the video footage as a group and journalists attended the larger designer workshop. This was an opportunity for designers to discuss amongst themselves and ask further questions of the journalists, as well as enabling the journalists to critique each others work in front of the design team. One designer described how *"that situation of debate* […] *was really valuable"*. This echoes previous observations that "video seems to enforce a collaborative approach to analysis" [20].

Beyond these practical elements, video was more capable of offering the breadth of representation and background detail described previously. Video, and to a certain extend audio, were capable of capturing *"peoples' personalities* [and] *not just their ability to write and report"*. For several of the designers, the visual aspect of the videos and photographic work were more inspirational than textual reports and subtle visual elements often served as starting points for ideas.

Both the accessibility of the content and its ease of creation are important concerns, particularly when we consider that both the journalists and local designers might be amateurs. From the journalists' perspectives, many were uncomfortable working in text and not accustomed to having to express themselves in that form, particularly not so frequently and at such length. Other formats were more comfortable and still provided opportunities for the journalists to offer their personal interpretation of the footage. For example, both video and audio pieces would typically include segments where the journalist spoke directly about their opinion on the subject at hand. The increasing availability of simple video tools serves to strengthen this benefit further.

Being Disconnected

Compared to typical participatory approaches, the design team were far more disconnected from the community. Partly, this was due to the distribution of the design team, who were all between three and six hours from the field site. But more importantly, having the journalists act as a proxy for the community meant that the design team did not engage directly with the community or build up the close relationship typically found in similar research. Even the relationship with the journalists was largely mediated through the editor, with most of their outputs being viewed remotely.

This contrasts sharply with approaches in which designers work very closely with participants to create highly customised and deeply personal objects [e.g. 16]. For members of the design team who were accustomed to working in this way, the disconnection from the community was disconcerting: *"for someone that works like I work, I'm not entirely sure it's for me, because I just find it easier to work* [when] *you have some direct communication with people"*.

Although this disconnection was necessary to allow us to study insight journalism effectively, we stress that the relationship between the journalists, the designers and the community would be an important part of an ongoing process. In our own project, we did break from this separation by attending community events and meeting with local organisers when gathering feedback on early prototypes. This proved to be important in selling the concepts to local organisations and using observations of public reactions to refine the design. In doing this, we were able to strike a compromise between the use of journalism and more common forms of community engagement.

Journalism as Evaluation

While the key utilisation of insight journalism was in providing insights for design, each of the individual designs were themselves interesting as objects to research, and our intention was to utilise journalism as part of the evaluation process as well as the design process. However, journalism proved to be far less successful in this role. One problem was the low quantity of data collected this way. In part, this highlights problems with maintaining activity from amateur journalists over a prolonged period, as not all the journalists had remained involved in the project up to this point.

The reports were also often uncritical and lacked sufficient depth to be convincing academically. In the case of Viewpoint, for example, one journalist returned a very useful interview with a local councillor, but responses from residents were limited to brief, largely complimentary vox pops. Many journalists found it difficult to produce critical pieces about something positive happening in the community and many still lacked the confidence of professional journalists to dig more deeply into some of the issues around each design. Further training would be required to address these issues but existing methods, such as focus groups or questionnaires and user observations, would have been more effective in this case. We therefore see insight journalism as a complementary approach to existing methods.

Although the fidelity of the journalism was perhaps too low to be effectively utilised for research purposes, it would certainly have been useful for iterating over the designs, particularly in the case of Wayfinder. In this sense, we see a strong potential for insight journalism to play part of an iterative design process, extending for long periods beyond deployment of a first prototype into the community. However, it would remain important for journalists to develop a confident and critical voice in order for a community to hold designers to account.

Value to the Community

Although we focus here, for the most part, on the value of insight journalism for inspiring innovative design, the process of journalism itself proved to have intrinsic value to the community. This value is not simply a welcome side effect: if journalism is to be used to support local innovation, it is critical that the community has motivation to keep generating such content without the intervention of researchers. While progress on actual developments might be slow or sporadic, additional value added by the journalism could continue to create enthusiasm.

The project newspaper in particular came to be seen as a valuable means for local groups to raise the profile of their activities. It was filled with positive stories that served to raise the community's self-esteem and counter previously negative depictions of the area. As the project went on, it attracted a series of favourable articles in both the local and national press, culminating in an exhibition at a major design museum, each of which were seen as positive results for the community.

There was also a strong focus on training and helping the journalists to gain skills that they could employ in other contexts. This process resulted in a number of individual triumphs. Most notably, one of the journalists, who had been unemployed and homeless, now operates his own digial media company that draws upon some of the skills and experience he developed in the project. This potential for empowerment has likewise been shown in past citizen journalism research [5]. Such success stories have the potential to act as an avenue for recruitment for citizen journalism, acting to counter the sort of burnout that can be common in community endeavours.

Sustainability

Finally, it is important to address the potential for creating sustainability in the process, which is one of the most difficult challenges faced in community research projects. During the project, we acted as the main drivers for the entire process of journalism, particularly the local team acting in the role of editor and trainer. While citizen journalism can and does spring up spontaneously, sustainable activity will realistically continue to require the input of experience and enthusiasm from other sources, such as local newspapers or community organisations.

In addition to the process itself, attitudes within the community are also critical to sustainability. Thus, in part the value of the project was in demonstrating the possibilities of local innovation. Describing the motivation for working with this specific community, one of the designers described how his own community had the confidence and capacity to create change in their environment and highlighted this as something that the community lacked. In this sense, an output of the project was to *"lift esteem and confidence"* while creating *"inspiration and excitement"*. This is balanced against the risk of creating expectations that are not delivered.

These are not issues that can be address comprehensively in a two-year project, but which must emerge through even longer-term engagement. Subsequent to our project, residents in have collaborated with academics on a number of other projects intended to bring value to the community and further work is required to ensure this value is sustainable in the long term.

CONCLUSIONS

We began this paper my motivating the need for more bespoke technology design to meet local needs and by suggesting that the source of such innovations should be on a local level. As a first step towards creating an environment in which local innovation can flourish, we have explored the potential for citizen journalism to act as a means to capture authentic voices and represent local issues to provide insights and inspire new technology designs.

Our work has shown that the public can be mobilised to conduct fieldwork and report findings in a way that exposed hyperlocal issues and inspired new technology designs. Insight journalism democratised the process of design by giving more direct access to a range of voices and perspectives led by local residents, rather than mandated by designers. The journalists came to act as proxy representatives of the community, which granted access to a wider swathe of depictions of community needs, desires and lifestyles. This ultimately led to the design of two unique technologies that responded to issues within the community exposed through journalism.

Insight journalism offers a number of benefits that distinguish it from traditional fieldwork methods, stemming from the fact that the material created has intrinsic value for the community. Local residents valued the monthly newsletter and there is now a wealth of positive stories reflecting life in the community. For the journalists themselves, becoming involved in the project provided valuable work experience and personal development. Critically, this intrinsic value means that insight journalism has the potential to be sustained without the intervention of researchers or other outside influences. Indeed, citizen journalism is already carried out in many communities around the world. In this sense, our approach repurposes a resource that already exists and adds extra value.

We emphasise that this is only a first step towards enabling sustainable local innovation in communities. Future work might concentrate on sustaining insight journalism and connecting this process to those with the capabilities to respond to journalists on a grassroots level. This is a significant challenge, but might be achieved through up-skilling communities or by connecting them with enthusiastic hobbyists who have access to equipment and skills. However, we also see potential for insight journalism to be utilised by a range of policymakers and service providers to tailor their activities, informed by the community's voice.

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